

Risk-Reduction Testing for the DESLA Upper Stage Engine (ACO: DESLA)

Completed Technology Project (2016 - 2018)



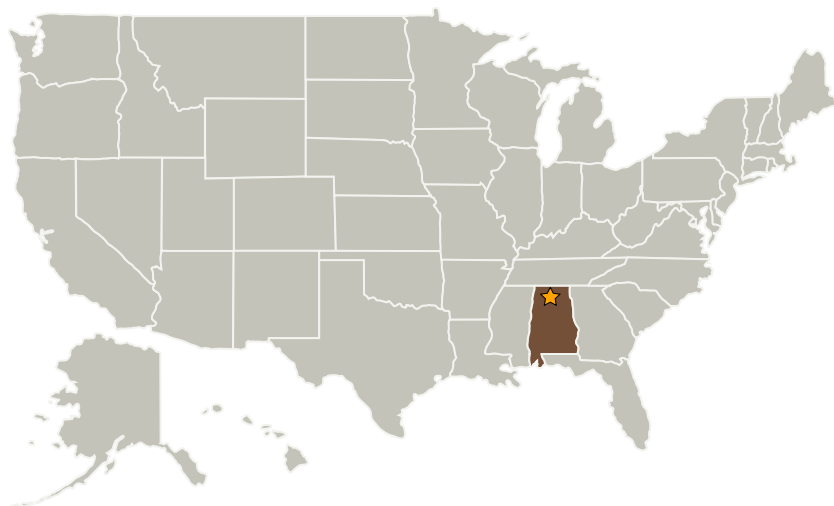
Project Introduction

Enabling the development of a commercial rocket engine, through subsystem risk-reduction testing

Anticipated Benefits

The purpose of this program is for risk-reduction testing of the Dual Expander Short-Length Aerospike (DESLA) engine. The program is an agreement between Exquadrum, Inc and NASA to collaborate on two tasks; a pressure-fed engine test (i.e., Task 1), and a water-flow test (i.e., Task 2) of the liquid oxygen (LOX) turbopump assembly (TPA) flow path. Task 1 will produce ignition, combustion, and hot-gas expansion data with the objective to identify subassembly integration issues among the thrust cells and nozzle on the thrust chamber assembly (TCA). Task 2 will produce dynamic performance data and operational loads in the Lox pump with the objective of enabling Exquadrum to finalize the hydraulic design of the TPA and progress to fabrication of heavyweight pump hardware. Exquadrum will primarily be responsible for the design and fabrication of both test articles, while NASA-MSFC will be responsible for conducting the test programs and performing associated performance data analysis.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission
Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center
(MSFC)

Responsible Program:

Game Changing Development

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Organizations Performing Work	Role	Type	Location
★ Marshall Space Flight Center (MSFC)	Lead Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations

Alabama

Project Transitions

▶ **April 2016:** Project Start

✔ **June 2018:** Closed out

Project Management

Program Director:

Mary J Werkheiser

Program Manager:

Gary F Meyering

Principal Investigator:

John W Peugeot

Target Destination

Foundational Knowledge